



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,299	05/09/2005	Michel Strebelle	271730US0PCT	9792

22850 7590 01/24/2007  
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER
----------

KEYS, ROSALYND ANN

ART UNIT	PAPER NUMBER
----------	--------------

1621

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/24/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/534,299

Applicant(s)

STREBELLE ET AL.

Examiner

Rosalynd Keys

Art Unit

1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Status of Claims*

1. Claims 1-13 are pending.

Claims 1-13 are rejected.

### *Response to Arguments*

2. Applicant's arguments, see pages 4-6 of Applicants remarks, filed October 24, 2006, with respect to the rejection(s) of claim(s) 1-10 under 35 U.S.C. 103(a) as being unpatentable over Gilbeau (US 6,063,941) in view of De Jong et al. (WO 96/03362) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Takehisa (JP 04327582) and Strebel et al. (US 6,288,248 B1).

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claims 1-6, 8, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takehisa (JP 04327582) in view of Strebel et al. (US 6,288,248 B1).

Takehisa (JP 04327582) teaches preparation of epichlorohydrin comprising purification of allyl chloride to lower the 1,5-hexadiene content and reacting with alkyl hydroperoxide in the presence of a catalyst (see attached Patent Abstract of Japan as well as the CAPLUS, JAPIO and WPIDS abstracts). It

Art Unit: 1621

is desirable to produce an epichlorohydrin from an allyl chloride having a 1,5-hexadiene content of  $\leq$  or  $\geq$  0.1wt% (see attached abstracts). Takehisa teaches that usually allyl chloride contains 0.3-0.5 weight% of 1,5-hexadiene, which is converted to 1,2-epoxy-5-hexene in oxidation (see attached WPIDS abstract). In the WPIDS abstract it is taught that this by-product 1,2-epoxy-5-hexene cannot be separated from epichlorohydrin by distillation. Thus, the process of Takehisa allows one to more economically prepare high purity epichlorohydrin.

Takehisa differs from the instant claims in that the epoxidation is carried out using an alkyl peroxide rather than a hydrogen peroxide.

Strebel et al. (US 6,288,248 B1) teach a process for the manufacture of epichlorohydrin by reaction of allyl chloride with a peroxide compound in the presence of a TS-1 catalyst and a solvent such as methanol (see entire disclosure, in particular column 1, line 5 to column 3, line 33). Strebel et al. teach that the peroxide compound which can be used in their invention can be chosen from hydrogen peroxide and any peroxide compound containing an active oxygen and capable of carrying out an epoxidation (see column 2, lines 29-36).

One having ordinary skill in the art at the time the invention was made would have found it obvious to substitute hydrogen peroxide, as taught by Strebel et al. for the alkyl peroxides of Takehisa, since Strebel et al. teach that in the preparation of epichlorohydrin alkyl peroxides are interchangeable with hydrogen peroxide.

6. Claims 1-10, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strebel et al. (US 6,288,248 B1) in view of Takehisa (JP 04327582).

Strebel et al. teach the invention as described above. A loop reactor is disclosed in example 1. Strebel et al. disclose all of the claimed limitations except the use of an allyl chloride comprising less than 2000 ppm by weight of 1,5-hexadiene.

Art Unit: 1621

Takehisa teaches a process for preparing an epichlorohydrin, which is analogous to the claimed process. Takehisa teaches that in said process it is desirable to utilize an allyl chloride comprising a 1,5-hexadiene content below 0.1 weight % (1000 ppm). The 1,5-hexadiene is taught to be converted to 1,2-epoxy-5-hexene by oxidation (see attached WPIDS abstract). In the WPIDS abstract it is taught that this by-product 1,2-epoxy-5-hexene cannot be separated from epichlorohydrin by distillation. Thus, the process of Takehisa allows one to more economically prepare high purity epichlorohydrin.

One having ordinary skill in the art at the time the invention was made would be motivated to utilize an allyl chloride having a 1,5-hexadiene content below 0.1 weight % (1000 ppm), as taught by Takehisa, in the process of Strebel et al. because it would allow the artisan to prepare the epichlorohydrin of Strebel et al. without formation of the unwanted by-product, 1,2-epoxy-5-hexene, which would form as a result of the oxidation of the 1,5-hexadiene by the peroxide used in the epoxidation of allyl chloride.

The Examiner believes that the teaching of Takehisa is properly combinable with the teaching of Strebel et al. because they are directed to analogous subject matter, i.e. epoxidation of an allyl chloride with a peroxide and both seek to solve a similar problem in the art, i.e. generation of unwanted by-products which are difficult to remove from epichlorohydrin.

#### ***Terminal Disclaimer***

7. The terminal disclaimer filed on October 24, 2006 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Application No. 10/534,502 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Art Unit: 1621

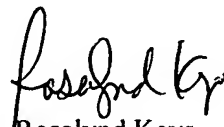
***Double Patenting***

8. The provisional rejection of claims 1-10 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 11-20 of copending Application No. 10/534,502 (US 2006/0041150 A1) in view of Gilbeau (US 6,063,941) is withdrawn, due to the filing of a Terminal Disclaimed on October 24, 2006.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosalynd Keys whose telephone number is 571-272-0639. The examiner can normally be reached on M, W & F 5:30-7:30 am & 1-5 pm; T & Th 5:30 am-4 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thurman Page can be reached on 571-272-0602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Rosalynd Keys  
Primary Examiner  
Art Unit 1621

January 20, 2007